alents in other modern languages to their strictly taxonomic meanings, *e. g.*, "type species," "typical genus," "type specimen," rejecting their use in their long recognized more general sense. The attempt to restrict a word in general use to a new technical meaning is always difficult and rarely is wholly successful.

May I suggest a way around the difficulty in the case of these words? If in its strictly taxonomic use the word be given its Latin form, *typus,* there will be no ambiguity. It would accomplish the purpose if all zoologists and botanists would abandon the use of the English words type and typical or their equivalents in other modern tongues, thus avoiding all chance of confusion, but this can hardly be secured. On the other hand, taxonomists, who have in mind the taxonomic conventions, might be expected to conform to a better usage, if recommended, and use only the Latin form for the technical meaning. It is easier to bring taxonomists to this better usage than it is to persuade all biologists to abandon the ordinary non-technical use of the vernacular equivalents of the word *typus.*

MAYNARD M. METCALF
THE ORCHARD LABORATORY,
OBERLIN, OHIO

QUOTATIONS

SCIENTIFIC DEVELOPMENT IN RUSSIA

A REVIEW, however cursory, of scientific work in Russia during the past two years must take account of two features of outstanding interest and importance. One is the appointment, on the initiative of the Imperial Academy of Sciences of Petrograd, of a commission to investigate and report on the natural resources of the Russian Empire with a view to their scientific and practical development and utilization.

Stated in one bald sentence this may not appear particularly impressive, but looked at through the lens of imagination it is revealed as a stupendous project with far-reaching aims and destined to lead to incalculable results. The prime incentive is the fact that in Russia, as elsewhere, the eyes of the nation have been opened and attention has been focused on what was in times of peace known to many, deplored by some, and passively acquiesced in by all: the extent to which its economic life has been honeycombed by the greater energy, enterprise and initiative of the Germans. It is now realized that this economic dependence, extending to many things which might just as well have been supplied by native industry, went far beyond the limits of a natural and legitimate exchange of products between neighboring countries, and the empire is firmly resolved to make a determined effort to put an end to an intolerable anomaly. Russia stands at the parting of the ways, and we in this year of grace are, it may be, witnessing the economic birth of a nation.

As may be supposed, the development of such a comprehensive scheme to the point of effective utility has not been accomplished without much discussion and some hostile criticism. One critic "doubts if the time is well chosen for embarking on such an ambitious enterprise when the strength of the empire is being taxed to the utmost by this terrible war. The end proposed is highly desirable, but . . . the program is so enormous that the preliminary steps alone will take years, to say nothing of the long interval that must elapse between scientific investigation and practical fruition . . ."; and he goes on to point out many problems to the immediate solution of which the academy might in this crisis more profitably apply its energies. However, the commission has in a surprisingly short time got to work—the first sitting took place only in October of last year—and is issuing a series of monographs, several of which have already been published, each written by a specialist, dealing, by way of a commencement, with the vast field, in many directions undeveloped, in others lying fallow, of Russian mining and metallurgy.

The other item of interest is the convening of a conference by the Imperial Academy of Sciences to consider the proposal to found a Russian Botanical Society with its own official journal. There is a great deal of botanical investigation carried on in Russia by various

institutions scattered all over the country, but it is felt that great advantage would accrue from coordination and centralization, and that the founding of such a society is only the just due of the importance of Russian botany "in view of the eminent position which Russia is destined to occupy after the war."

But side by side with these special activities, which are the direct outcome of the quickening of the nation's pulse, there is, as in normal times, a great amount of quiet, unobtrusive research in the domains of biological and physical science. Though there may be no epoch-making discovery to record, there is scarcely a field of mental activity left untilled. Many a peaceful backwater is being navigated undisturbed by the clash of arms, and it is pleasant to read of ethnographical and philological investigations, or of an expedition to the Jablonovy Range to study the local fauna, with its picturesque account of explorations in steppes, morasses and virgin forests. It is interesting to note, in this connection, that there is scarcely a provincial town of any importance in Russia without its medical society and association of local naturalists, or, as the charming Russian idiom has it, "lovers of nature lore," true amateurs in the best sense of the word and all contributing their quota to the common stock. Worthy of mention also are the efforts made for the preservation, as far as may be possible in the circumstances, of valuable treasures of art, science and archeology in the war-zone, such efforts not to be confined to the limits of the empire, but to be extended to enemy territory occupied by Russia. It is pointed out that priceless products of human culture may be saved if timely measures be taken, and to this end the service of various scientific experts has been secured and the sympathetic cooperation of the military staff enlisted.

Finally, mention must be made of the decision of the Imperial Academy of Sciences on the question of the exclusion of alien enemies from the list of honorary members. As the result of a conference held in March of last year to consider the matter the academy expresses itself as loath, by such exclusion, to place any obstacles in the way of the resumption after the war of that international cooperation for the progress of science which will, it foresees, play a greater part than ever in the development of European civilization, "when an end has been made of those hegemonistic strivings which, not content with the sphere of politics, have invaded that of science." Truly a dignified attitude, worthy of an august institution which can look back with just pride on well-nigh two centuries of enlightened effort and solid achievement.—*Nature.*

SCIENTIFIC BOOKS

X-rays and Crystal Structure. By W. H. BRAGG and W. L. BRAGG. G. Bell & Sons, Ltd., London, 1915. Pp. i + vii, 1–228.

All physicists who are at all familiar with the magnificent work which in the two short years between October, 1912, and October, 1914, W. H. and W. L. Bragg did in unfolding the nature of X-rays, revealing the structure of crystals and in laying the foundations for Moseley's brilliant discovery of a relationship between the elements more fundamental than that represented by the periodic table, are agreed that no Nobel prize was ever more justly placed than that which has recently gone to the Braggs. It is the lucid and succinct account of this very new work which constitutes the present book—a book which will always remain a classic, not merely because it is the first book in its field and written by the men who have themselves contributed most largely to the ushering in of the new epoch, but also because it is an unusually fine example of clear, direct and fascinating exposition.

None of the twelve chapters except the fourth, the sixth and the last contain any appreciable material other than that which the authors themselves have contributed. Despite the generous and deserved recognition which they make of the part which Laue played in starting their studies, it is very largely to the Braggs that the world owes the creation of the new subject of X-ray spectrometry, and so long as young men are appearing in England of the caliber of W. L. Bragg and of Moseley, the latter of whom at the age of twenty-seven